Fluorescence microscopy on the biocompatibility of gentamicin-coated hydroxyapatite (HA) material on osteoblast.

ABSTRACT

This study was carried out to observe the biocompatibility of gentamicin-coated hydroxyapatite (HA) on osteoblast using fluorescence microscopy. The specific objective was to observe the viability of the osteoblast on the gentamicin-coated hydroxyapatite (HA) and to determine the effect of the biomaterial coated with gentamicin on the osteoblast. Osteoblast cell lines were cultured and maintained in complete medium, 1:1 HAM's F12 Medium Dulbecco's modified Eagle's medium without phenol red (DMEM) and incubated at 37°C in a 5% CO 2. The cell lines were treated with different concentration of gentamicin-coated hydroxyapatite and the interactions of the antibiotic beads against osteoblast were tested using the 3-(4, 5-dimethylthiazol-2-yl)-2,5-diphenyl tetrazolium bromide (MTT) assay. The MTT assay results indicated that varying concentrations of gentamicin coated HA from 0.1 mg/ml to 10 mg/ml did not significantly affect viability of osteoblast. By employing fluorescence microscopy, the morphology of osteoblast observed appeared red in color which indicated that the osteoblast was viable on biomaterial. The pore size of hydroxyapatite is between 150 to 350 nm. This preliminary result suggested that the gentamicin-coated HA had a good biocompatibility towards osteoblast.

Keyword: Biocompatibility; Fluorescence microscopy; Gentamicin-coated hydroxyapatite (HA); MTT assay; Osteoblast.